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| 09/912,812 | 07/25/2001 | Heather Noel Bean | 10011701 | 7171 |

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HEWLETT PACKARD COMPANY
P O BOX 272400, 3404 E. HARMONY ROAD
INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER

WHIPKEY, JASON T

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2612

DATE MAILED: 12/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/912,812

Applicant(s)

BEAN ET AL.

Examiner

Jason T. Whipkey

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 21-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 21-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 15, 2005 has been entered.

Response to Arguments

2. Applicant's arguments with respect to claims 1-7 and 21-25 have been considered but are moot in view of the new grounds of rejection.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 5 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim contains subject matter which was not described in the

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specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention.

Claim 5 specifies that the image sensor recited in claim 1 is film. However, claim 1 also recites a processor communicating with the image sensor. The claims do not apprise one of ordinary skill in the art how a piece of film communicates with a processor.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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7. Claims 1 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki (U.S. Patent No. 5,649,250) in view of Malloy-Desormeaux (U.S. Patent No. 6,577,821) and DeWolff (PCT Publication No. WO 92/11567).

Regarding **claim 1**, Sasaki discloses a still image capturing device (see Figure 18), comprising:

- an image sensor (film 98) including a plurality of pixel elements (film F);
- a lens (micro lens system 5) for focusing light from a scene onto said image sensor (the film grain inherently present);

- an electronically actuable shutter device (LCD shutter 16) positioned between said lens and said image sensor, including a plurality of individually addressable and actuable shutter elements (different areas of the shutter are opened at different periods of time; see column 7, lines 14-37), with a shutter element of said plurality of individually addressable shutter elements substantially corresponding to at least one of said plurality of pixel elements (in comparing the size of the grains of silver halide to the size of the shutter, this is inherent);

- a memory storing one or more exposure patterns (a memory of some form is inherently present in order to implement the patterns shown in Figure 19);

- a processor communicating with said shutter device and with said memory (some sort of processor is inherently present in order to execute the shutter operations at a specified timing; see column 7, lines 14-37), said processor controlling said plurality of shutter elements according to said exposure threshold and/or according to an exposure pattern stored in said memory (see Figure 19).

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Sasaki is silent with regard to storing an exposure threshold in the memory.

Malloy-Desormeaux discloses the camera shown in Figure 4. The camera stores lookup tables containing over- and under-exposure thresholds used for the evaluation of the exposure of a captured image.

An advantage of storing exposure thresholds is that they can be used to determine whether a captured image will be usable (see column 36, lines 35-45). For this reason, it would have been obvious at the time of invention to have Sasaki's system store exposure thresholds.

Sasaki is also silent with regard to exposing different shutter elements for different lengths of time.

DeWolff discloses an imaging system, wherein:

different shutter elements of a shutter device may be light transmissive for different lengths of time, and thereby exposing corresponding pixel elements of said image sensor to focused light from said lens for different lengths of time (see page 14, lines 4-10).

An advantage of applying exposure patterns with varying exposure durations is that a user is provided more flexibility in producing an image — by applying the shapes described on page 13, lines 24-26, for example — which includes adjusting the contrast of specific areas of the image. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Sasaki's imaging device apply exposure patterns and different exposure durations.

Regarding **claim 5**, Sasaki discloses:

said image sensor comprises film (see column 7, line 27).

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8. Claims 1, 2, 4, 6, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi (U.S. Patent Application Publication No. 2005/0140820) in view of Malloy-Desormeaux and DeWolff.

Regarding **claim 1**, Takeuchi discloses a still image capturing device (see Figure 1), comprising:

an image sensor (8) including a plurality of pixel elements;

a lens (first lens group 5) for focusing light from a scene onto said image sensor;

an electronically actuatable shutter device (liquid shutter 6) positioned between said lens and said image sensor (see paragraph 72), including a plurality of individually addressable and actuatable shutter elements (pixels 11; see paragraph 84), with a shutter element of said plurality of individually addressable shutter elements substantially corresponding to at least one of said plurality of pixel elements (inherent);

a memory storing one or more exposure patterns (a predetermined exposure operation is effected; see paragraph 71);

a processor (a driving portion not shown; see *id.*) communicating with said image sensor, with said shutter device, and with said memory, said processor controlling said plurality of shutter elements according to said exposure threshold and/or according to an exposure pattern stored in said memory (this is inherent, as shuttering and image sensing must be a coordinated operation in order for the invention to work).

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Takeuchi is silent with regard to storing an exposure threshold in the memory.

Malloy-Desormeaux discloses the camera shown in Figure 4. The camera stores lookup tables containing over- and under-exposure thresholds used for the evaluation of the exposure of a captured image.

An advantage of storing exposure thresholds is that they can be used to determine whether a captured image will be usable (see column 36, lines 35-45). For this reason, it would have been obvious at the time of invention to have Sasaki's system store exposure thresholds.

Takeuchi is also silent with regard to exposing different shutter elements for different lengths of time.

DeWolff discloses an imaging system, wherein:

different shutter elements of a shutter device may be light transmissive for different lengths of time, and thereby exposing corresponding pixel elements of said image sensor to focused light from said lens for different lengths of time (see page 14, lines 4-10).

An advantage of applying exposure patterns with varying exposure durations is that a user is provided more flexibility in producing an image — by applying the shapes described on page 13, lines 24-26, for example — which includes adjusting the contrast of specific areas of the image. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Sasaki's imaging device apply exposure patterns and different exposure durations.

Regarding **claim 2**, Takeuchi discloses:

said shutter device comprises a liquid crystal display shutter element (6) comprising a two-dimensional array of individually addressable and actuatable shutter elements (each pixel in the matrix may be driven separately; see paragraph 84).

Regarding **claim 4**, Takeuchi discloses:

said memory further includes a predetermined image exposure period that controls an overall exposure duration of an image capture (see paragraph 71).

Regarding **claim 6**, Takeuchi discloses:

said image sensor comprises an electronic image sensor (see paragraph 66).

Regarding **claim 7**, Takeuchi discloses:

said exposure pattern comprises two or more pixel unit exposure durations (sections 6A and 6B are alternately driven, thus comprising two exposure durations; see paragraph 71).

9. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi in view of Malloy-Desormeaux and DeWolff and further in view of Lanzillotta (U.S. Patent No. 5,781,333).

Claim 3 may be treated like claim 1. However, Takeuchi is silent with regard to using a two-dimensional array of microelectromechanical shutter elements.

Lanzillotta discloses:

said shutter device comprises a microelectromechanical shutter element (Figure 3 shows an array of light shutters 15 for controlling light transmission; see column 5, lines 11-20) comprising a two-dimensional array of individually addressable and actuatable shutter elements (each shutter is selectively opened and closed; see abstract, lines 2-4).

As stated in column 1, lines 28-30, and column 3, lines 44-46, an advantage of using such a shutter array instead of an LCD to control light transmission is that LCDs have relatively low speeds. For this reason, it would have been obvious at the time of invention to have Takeuchi's system use the shutter system disclosed by Lanzillotta.

10. Claims 21, 22, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cornuejols (U.S. Patent No. 5,193,016) in view of Bryant (U.S. Patent No. 5,030,985).

Regarding **claim 21**, Cornuejols discloses an imaging module for an imaging capturing device (see Figure 13), comprising:

an image sensor (electronic image pick-up 40) including a plurality of pixel elements; and

an electronically actuatable shutter device (photo-transparent component 6; see column 6, lines 12-18) positioned adjacent to said image sensor, including a plurality of individually addressable and actuatable shutter elements (see column 9, lines 64-65),

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wherein said shutter device selectively exposes said image sensor to light from a scene to be imaged for different amounts of time on an individual pixel level (see column 9, lines 64-66).

Cornuejols is silent with regard to each shutter element corresponding to at least one of the plurality of pixel elements.

Bryant discloses an imaging device (see Figure 2), including:

a shutter element of said plurality of individually addressable shutter elements substantially corresponding to at least one of said plurality of pixel elements (see column 3, lines 35-40).

An advantage of including a shutter element for each pixel element is that the shutter can more accurately compensate for differences in illumination in a frame. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Cornuejols's imaging device include a shutter element that corresponds to each pixel element on the image sensor.

Regarding **claim 22**, Cornuejols discloses:

said shutter device comprises a liquid crystal display shutter element comprising a two-dimensional array of individually addressable and actuatable shutter elements (see column 6, lines 12-18).

Regarding **claim 24**, Cornuejols discloses:

wherein said image sensor comprises an electronic image sensor (see column 10, line 66).

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11. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cornuejols in view of Bryant and further in view of Lanzillotta.

Claim 23 may be treated like claim 21. However, Cornuejols is silent with regard to using a two-dimensional array of microelectromechanical shutter elements.

Lanzillotta discloses:

said shutter device comprises a microelectromechanical shutter element (Figure 3 shows an array of light shutters 15 for controlling light transmission; see column 5, lines 11-20) comprising a two-dimensional array of individually addressable and actuatable shutter elements (each shutter is selectively opened and closed; see abstract, lines 2-4).

As stated in column 1, lines 28-30, and column 3, lines 44-46, an advantage of using such a shutter array instead of an LCD to control light transmission is that LCDs have relatively low speeds. For this reason, it would have been obvious at the time of invention to have Cornuejols's system use the shutter system disclosed by Lanzillotta.

12. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cornuejols in view of Bryant and further in view of DeWolff.

Claim 25 may be treated like claim 21. However, Cornuejols is silent with regard to exposing the image sensor in accordance with an exposure pattern with two or more pixel unit exposure durations.

DeWolff discloses an image sensing device, wherein:

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a shutter device (LCD pad 13; see Figure 1 and page 8, line 26, through page 9, line 5) selectively exposes said image sensor in accordance with an exposure pattern (stored in computer 32; see page 13, lines 18-26) having two or more pixel unit exposure durations (LCD pixels have varying exposure periods; see page 14, lines 4-10).

An advantage of applying exposure patterns with varying exposure durations is that a user is provided more flexibility in producing an image — by applying the shapes described on page 13, lines 24-26, for example — which includes adjusting the contrast of specific areas of the image. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Cornuejols's imaging device apply exposure patterns and different exposure durations.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Whipkey, whose telephone number is (571) 272-7321. The examiner can normally be reached Monday through Friday from 9:00 A.M. to 5:30 P.M. eastern daylight time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc-Yen Vu, can be reached at (571) 272-7320. The fax phone number for the organization where this application is assigned is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JTW

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December 5, 2005

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NGOOC YEN VU
PRIMARY EXAMINER